Thursday, 3/22/2007 7:47:37 AM -User: Kim Johnston **Process Sheet** 31917 Drawing Name 👵 : X-TUBE 412 : CU-DAR001 Dart Helicopters Services Customer ပ်ဝို့b Number : 31437 **Estimate Number** : 12727 : NIA : D412664245 Part Number P.O. Number : D412-664-245 U/R **Drawing Number** S.O. No. : 14/1 : 3/22/2007 This Issue Project Number Prsht Rev. : U/R : LANDING GEAR Drawing Revision First Issue :.31436 Material Previous Run Each : 3/29/2007 Due Date Written By Checked & Approved By New Issue 07-02-14 JLM Comment : Est Rev.W Additional Product Job Number: Description: Machine Or Operation: Seq. #: 🔐 Crosstube Material _Comment: Qty.: 1.0000 Each(s)/Unit Total: 1.0000 Each(s) -Pick: Qty Part number Description Batch Check OD = 3.500"; ID = 2.250" DOCUMENT CONTROL Comment: DOCUMENT CONTROL Photocopy bluefile & type labels per PPPD412-664-205 **CHG001** MORI SEIKI CNC LATHE LARGE MORI SEIKI Comment: MORI SEIKI CNC LATHE LARGE Turn as per Dwg D412-664-245 QC2 4.0 Comment: INSPECT PARTS AS THEY COME OFF MACHINE SECOND CHECK 5.0 QC8 Comment: SECOND CHECK

W/O:	WORK ORDER CHAI						ANGES				****	
DATE	STEP	- Seni			RE CHANGE	**·		Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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		Description of NC	Corrective Action Section B			Varification	, A====================================	is.
DATE	STEP	Description of NC Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Verification Section C	Approväl Chief Eng	Approval QC Inspector
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 Thursday, 3/22/2007 7:47:37 AM Date: Kim Johnston User: ** **Process Sheet** Customer: CU-DAR001 Dart Helicopters Services Drawing Name: X-TUBE 412 Ĵob Number: 31437 Part Number: D412664245 Job Number: Seq. #: Description: Machine Or Operation: LANDING GEAR RESOURCE 1 LANDING GEAR 1 Comment: LANDING GEAR RESOURCE 1 Jb 7-4-4 1-Polish entire outside surface of crosstube 7.0 INSPECT WORK TO CURRENT STEP Comment: INSPECT WORK TO CURRENT STEP HAND FINISHING RESOURCE #1 Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat as per QSI 005 4.1 INSPECT WORK/WING WALK 9.0 QC3/5 Comment: Inspect work & Chemical conversion Coat Comment: BENDING MACHINE Bend tube as per Dwg D412-664-243 using CNC bender program 412-af and Folio FT010 DIMENSIONAL CHECK 11.0 Comment: DIMENSIONAL CHECK D36061 2.0000 Each(s) Comment: Qty.: 2.0000 Each(s)/Unit Total: **CUFF** 07-04-18 31150 Batch LANDING GEAR RESOURCE 1 Comment: LANDING GEAR RESOURCE 1 Rt 07-04-68 1-Drill Rivet holes as per Dwg D412-664-245 2-Drill pilot holes in tube as per Dwg D412-664-245 3-Ream hole to finish size in tube as per Dwg D412-664-245

W/O:		WORK ORDER CHAN	NGES		,		
DATE	STEP	PROCEDURE CHANGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
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QA: N/C Closed: ____ Date: _

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		Description of NC		Corrective Action Section B		Verification		Annessal			
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Section C	Approval Chief Eng	Approval QC Inspecto			
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Thursday, 3/22/2007 7:47:37 AM Date: User: ' Kim Johnston **Process Sheet** Customer: CU-DAR001 Dart Helicopters Services Drawing Name: X-TUBE 412 Part Number: D412664245 Job Number: 31437 Job Number: Description: Seq. #: Machine Or Operation: 4-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D412-664-245 HAND FINISHING RESOURCE #1 HAND FINISHING1 12:0 Comment: HAND FINISHING RESOURCE #1 Chemical Conversion Coat Tube & Cuffs as per QSI 005 4.1 INSPECT POWDER COAT/CHEMICAL CONVERSION 15.0 QC3 COAT/CHEMICAL CONVERSION INSPECT WORK TO CURRENT STEP QC5 40 704·130 WORK TO CURRENT STEP 17.0 OUTSIDE SERVICES 15.0 Comment: Sub-Contracting OUTSIDE SERVICES Liquid Penetrant Inspection as per QSI 0380r CL07/04/130 Issue P/O: 3546 LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order PACKAGING RESOURCE #1 PACKAGING 1 16.0 Comment: PACKAGING RESOURCE #1 Inspect for transit damage Ensure copy of NDT results attached to work order. QC5 -19.0 11.0 Comment: Inspect for damage & ensure results are as per Dwg D412-664-203 LANDING GEAR RESOURCE 1 20.0, Comment: LANDING GEAR RESOURCE 1 1-Rivet Cuffs as per Dwg D412-6647-245. with Sika flex in Between tube & Cuff ET 07-04-18 SIKAFLEX -241/-291 BATCH: MO3561

W/O:		WORK ORDER CHANGES									
DATE	STEP	PROCEDURE CHANGE	Ву	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector				
07,64,18	21	USE CR3212-4-07 RIVERS INSTRAD OF CR3212-4-06				951 UB					

Part No: _	P	PAR #:	Fault Category:	NCR: Yes	No	DQA:	Date: _	
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DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign & Date	Verification Section C	Approval Chief Eng	Approval QC Inspector
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Thursday, 3/22/2007 7:47:37 AM Date: Kim Johnston User: ' **Process Sheet** Drawing Name: X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664245 Job Number: 31437 Job Number: Description: Machine Or Operation: CR3212406 - 6 CHERRY RIVET 57.04.18 4.0000 Each(s) Comment: Qty.: 44.0000 Each(s)/Unit Total: CHERRY RIVET RT 07-04-18 M17569 SPRAY PAINTING 22.0 Comment: SPRAY PAINTING 1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005·4.2 23.0 QC14 Inspect Spray Paint Comment: Inspect Spray Paint Wrap in plastic bag to protect from scratches 24.0 2.0000 Each(s)/Unit Total: 2.0000 Each(s) Comment: Qtv.: Chafing Shield 07-04-19 Batch: Rubber Cushion (per sq ft) D3595 25.0 Comment: Qtv.: 0.0536 sf(s)/Unit Total: 0.0536 sf(s)Rubber Cushion Cut to .630" X 5.8" X 2PCS EC 07-04-19 D28961 26.0 Comment: Qty.: 1.0000 Each(s)/Unit 1.0000 Each(s) Total: Pick: Description Batch 37166 PT 07-04-19 Qty Part number 1 D2896-1

W/O:		WORK ORDER	CHANGES				
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Thursday, 3/22/2007 7:47:37 AM Date: Kim Johnston User: * **Process Sheet** Drawing Name: X-TUBE 412 Customer: CU-DAR001 Dart Helicopters Services Part Number: D412664245 Job Number: 31437 Job Number: Description: Seq. #: **Machine Or Operation:** D2856600 Abrasion Strip 27.0 Comment: Qty.: 0.9450 f(s) Total: 0.9450 f(s)/Unit Abrasion Strip 2 X D2856-600-1009 26650 Batch: MS2192028 Comment: Qty.: 4.0000 Each(s) 4.0000 Each(s)/Unit Total: Pick: Qty Part number **Description Batch** RT 07 0419 Clamp 10253 4 MS21920-28 clamp(per MIL-DTL-8783C) MS2192032 Total: 2.0000 Each(s) Comment: Qty.: 2.0000 Each(s)/Unit AR clamp(per MIL-DTL-8783C) RT 07-04-19 batch: 102931 LANDING GEAR RESOURCE 1 30.0 Comment: LANDING GEAR RESOURCE 1 Assemble as per Dwg D412-664-245 Install Chaffing Sheilds eT 04-19 Instal support with magnobond 6398 per dwg D412-664-245, cure for 12hrs before packaging. Time & date of application: 600 pm 07-04-19 Batch: M103 628 INSPECT WORK TO CORRENT STEP 31.0 QC5 304·20/A Comment: INSPEC WORK TO CURRENT STEP PACKAGING RESOURCE #1 32.0 Comment: PACKAGING RESOURCE #1 PPP B31917 Identify and pack for shipping as per PPP D412-664-205

Page 5

W/O:		WORK ORDER CHA	WORK ORDER CHANGES									
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Date: User:		rsday, 3/22/2007 7:47:37 AM Johnston	Process Sheet	
*** (CU-DAR001 Dart Helicopters Services	Drawing Name: X-TUBE 412	
. Job	Number:	31437	Part Number: D412664245	
Job Nu	imber:			
Seq. #	#:	Machine Or Operation:	Description :	
		Time & date of packaging:	POSITIVE RECALL EFFECTIVE 57.63,22 AUTH RELEASED DATE 7.63,20	
		Location:PPP Rev:		
work-ma	33.0 \$4.00	QC21	FINAL INSPECTION/W/O RELEASE	
	Comme	ent: FINAL INSPECTION/W/O RELEASE	D07/04/20	
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D.4.T.F.	OTER	Description of NC		Corrective Action Section B		Verific	cation	Approval	Approval
DATE	STEP	Section A	Initial Chief Eng	Action Description Chief Eng	Sign of Date	Secti		Chief Eng	QC Inspector
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	DESIGN P DRAWN BY			DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA
	CHEC	KED 11	APPROVED //	DRAWING NO. REV. B
				D412-664-245 SHEET 1 OF 3
	DATE			TITLE SCALE
	07.0	3.01		CROSSTUBE ASS'Y (412 LOW-N AFT) NTS
_	Α		06.12.01	NEW ISSUE
	В	,	07.03.01	CHG CUFF AREA, CHG RUBBER CUSHION

ENGINEERING UNCONTROLLED COPY

SUBJECT TO AMENDMENT

WITHOUT NOTICE

WORK ORDER

NO.

PRELIMINARY ISSUE

PARTS LIST:

Qty	Part Number	Description
		,
X	D412-664-245	CROSSTUBE ASSEMBLY (412 LOW-NARROW AFT)
		000000000000000000000000000000000000000
1	D6009-129	CROSSTUBE
2	D2856-600-1009	ABRASION STRIP
1	D2896-1	SUPPORT
2	D3189-1	CHAFING SHIELD
2	D3595-063-580	RUBBER CUSHION
2	D3606-1	CUFF
44	CR3212-4-06	RIVET (OR M7885/3-4-06)
4	MS21920-28	CLAMP
2	MS21920-32	CLAMP
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE
		(TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)
		SEALANT)
	L	S11

GENERAL NOTES:

1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.

MATERIAL: MANUFACTURED FROM D6009-129 2)

FINISHED LENGTH = 123.59±0.020 (BEFORE BENDING/TRIMMING)

FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1 PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2 PAINT OUTSIDE PER DART 005 4.2

PART IS SYMMETRIC ABOUT CENTERLINE.

RUN-OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH. 5)

BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO 6) BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.

LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038. 7)

SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.

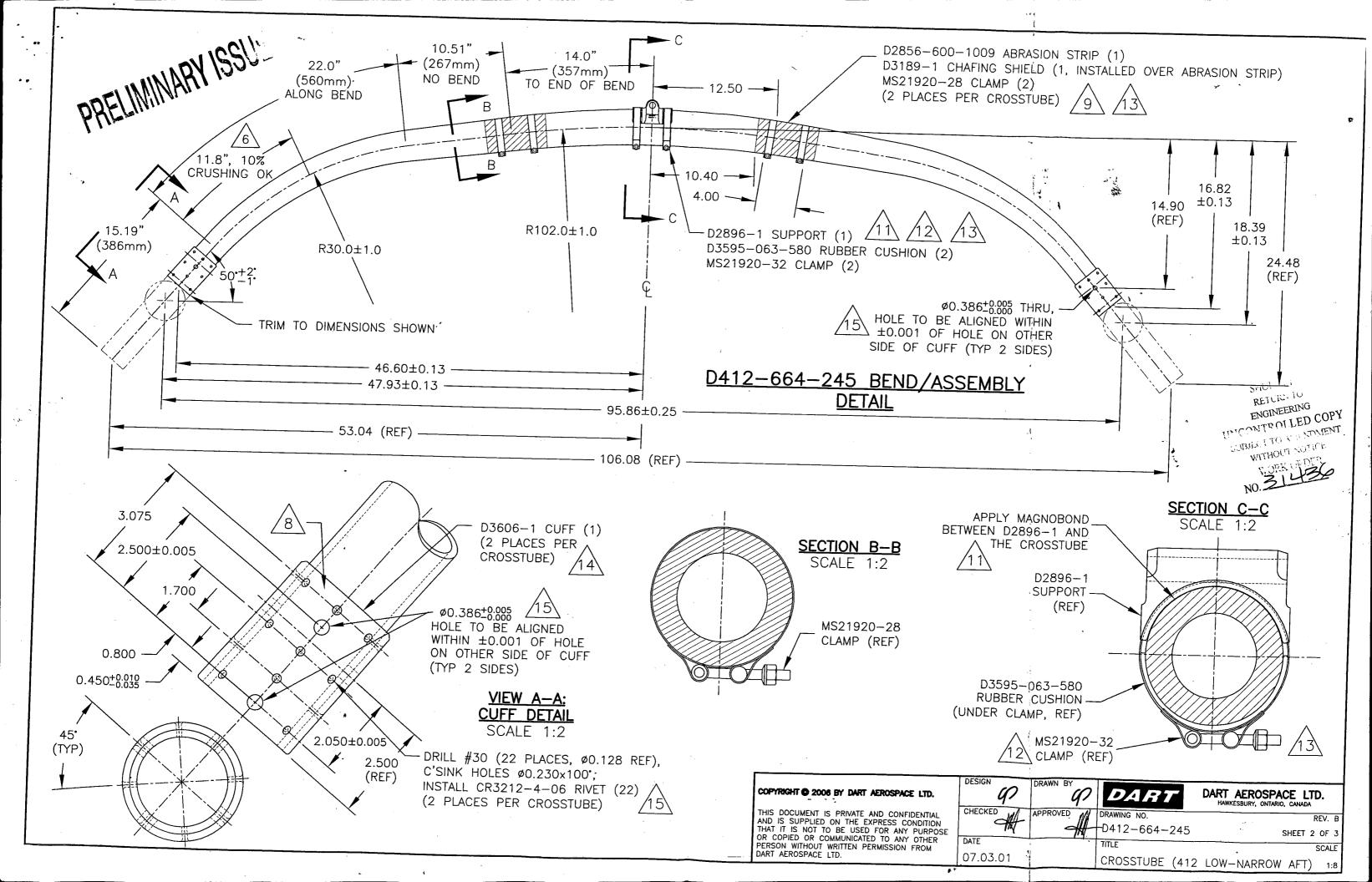
INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.

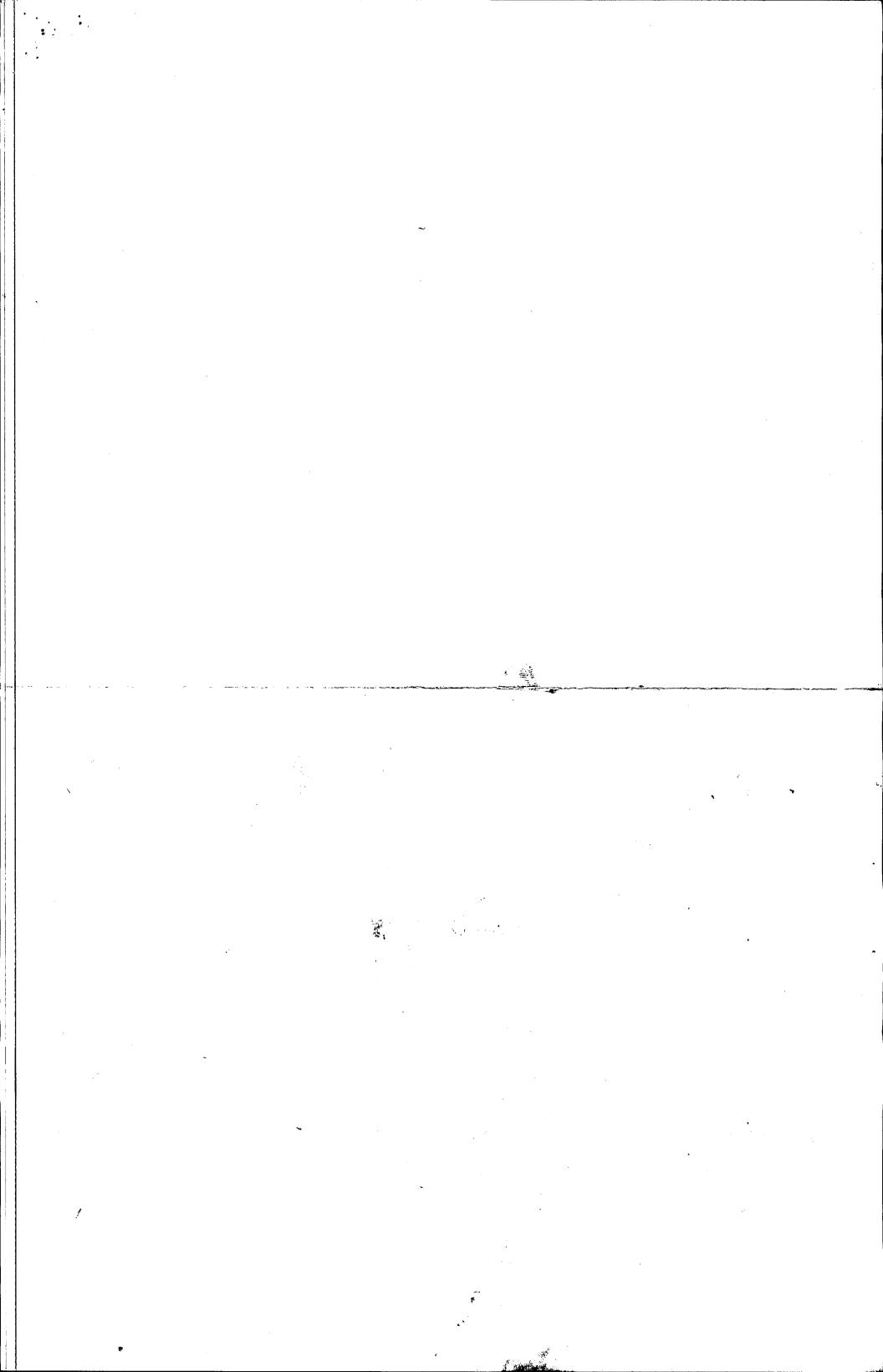
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-32 CLAMPS WITH D3595-063-580 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.

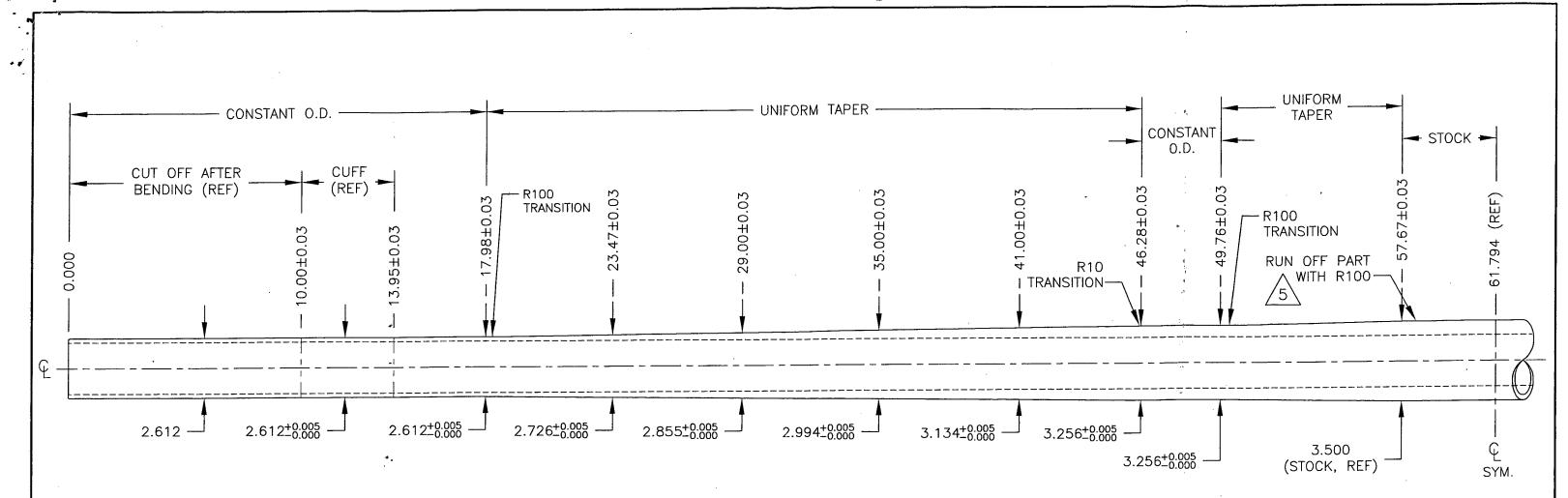
13) TORQUE CLAMPS 80 TO 100 IN-LB.

- 14) INSTALL D3606-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE.
- 15) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

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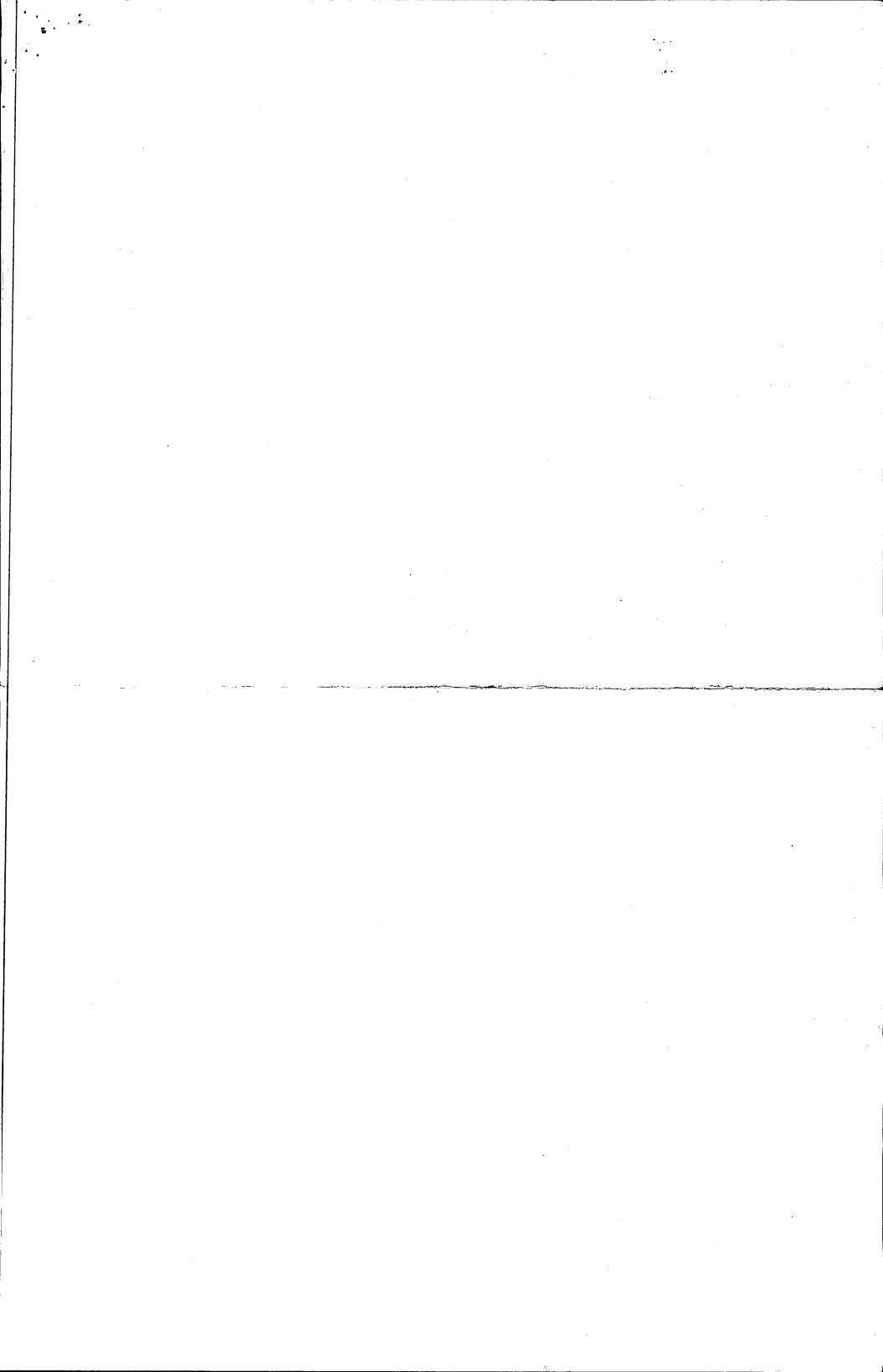


D412-664-245 MACHINING DETAIL

PRELIMINARY ISSUE

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SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO.

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THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE	CHECKED	APPROVED	DRAWING NO. D412-664-245	REV. B SHEET 3 OF 3
OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	DATE 07.03.01		TITLE CROSSTUBE (412	SCALE 2 LOW—NARROW AFT) 1:4



DART AEROSPACE LTD	Work Order:	31437
Description: Crosstube Assembly 412 Law-Narrow AFT	Part Number:	412-664-245
Inspection Dwg: D412-664 245 Rev: B		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

		X	First Article		Prototy	pe	
lr Dra	spection Sheet awing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
	2.612	+ .cos	2616	<u> </u>	\$ & : :		
	2.612	"	2.616	~			
	2.726	W	2.729	<u></u>			
	2.855	"	2.859				
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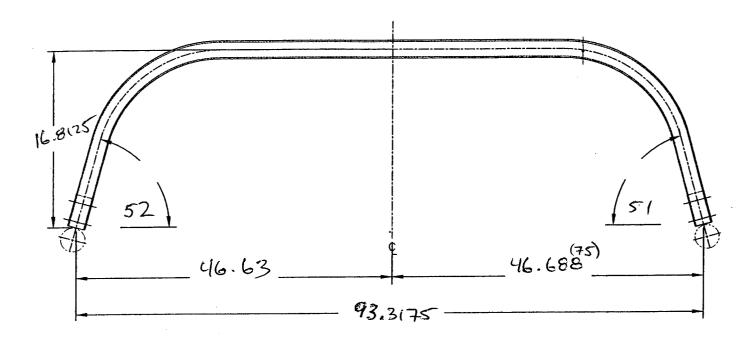
Measured by: Ne /	Audited by:	Prototype Approval:	N/A
Date: 07/03/26	Date: 07/04/04	Date:	N/A

Rev	Date	Change	Revised by Approved
Α		New Issue	KJ/JLM

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DART AEROSPACE LTD	Work Order:	31437
Description: Crosstube Low Narrow Aft (412)	Part Number:	D412-664-245
Inspection Dwg: D412-664-245 Rev: B		Page 1 of 1

Required Dimension	Min	Max	
Height	16.69	16.95	
1/2 Span	46.47	46.73	
Angle	49°	52°	
Total Span	92.94	93.46	



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QC15 Inspection	<i></i>
Date	0704-12

Rev	Date	Change	Revised by_	Approved
Α	07.03.29	New Issue	KJ/JM	L.
	<u> </u>			



TRAVEL EXPENSES

HOTEL EXPENSES

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HeathAir

INTERNATIONAL (1991) INC.

681 Ave. Lepine, Dorval, Québec H9P 1G3 Tél.: (514) 636-1000 • Fax: (514) 636-0031 **W.0.** N° 36169

A.M.O. Number: 46/90

PST

TOTAL \$

NON-DESTRUCTIVE TESTING REPORT

•	EXMINITE	T/COMPONENT	INFORMATIO	Ŋ	
REGISTRATION:	MODEL/TYPE	:	SERIAL	NUMBER:	
TOTAL HR/LDG:	OPERATED BY	Y:		BASED AT:	
	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Baddon Badd	REMEMBA		
Carry out FPI of five 038, Section 4.1.1 (or Qty. (1) P/N D412-Qty. (2) P/N D412-Qty. (2) P/N D412-	n file at client) - pa 664-245 S/N 664-145 S/N	sternal surface) as parts delivered to He B31437 's B31435 & B3113 's B29531 & B2956	eathAir. 39	7-05 and the Dart Q)SI
RADIOGRAPHY	ULTRASONIC	PENETRANT	MAGNET	IC PARTICLE	EDDY CURRENT
Fluorescent penetrant inspection was performed in accordance with the above requirements on five (5) cross tubes. Note: A Level 3 penetrant was substituted for the requested Level 2 (3 is more sensitive) Ardrox 970P25E Batch #04B503. Fuve (5) cross tubes PASSED inspection.					
· THE MAINTENANG	CE DESCRIBED ABOVE HAS BEI THE APPLICABLE STANDARDS	EN BERFORMED IN ACCORDANC FAIRWORTHINESS	E WITH	April 16, 20	007
INSPECTED BY:	5.6	चित्रकार. यहारमांबार.		INSPECTION Not Requ	ired
customer: Dart Aerospa		STOMER INFOR	MATION 1	P.O. NUMBER 3546 CONTACT NAME:)
LABOUR	@			\$	
AA STERIAL C					

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INVOICE NO.

